

### **REMARKS**

Claims 1, 2, 4-7, and 29-51 were pending. Claim 1 has been amended. Claim 52 has been added. Claims 2, 4-6 and 30-51 were withdrawn from consideration as being drawn to a non-elected invention. Therefore, claims 1, 2, 4-7 and 29-52 are pending.

Support for the amendment to claim 1 can be found, for example, at least at page 3, line 32, and page 4, lines 15-17 of the specification. Support for new claim 52 can be found, for example, at least at page 36, line 21. Claim 52 is directed to the elected compound, 9-t-butyl-6-deoxy-5-acetylcarbonyloxytetracycline, which was found by the Examiner to be free of the prior art. No new matter has been added.

Amendments to the claims should in no way be construed as an acquiescence to any of the Examiner's rejections. The amendments to the claims are being made solely to expedite prosecution of the above-identified application. Applicants reserve the option to further prosecute the same or similar claims in the instant or in another patent application.

#### ***Rejection of Claims 1 and 29 Under 35 U.S.C. § 102(b)***

Claims 1 and 29 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 3,901,942 ("942 patent") to Bernardi *et al.* According to the Examiner, the '942 patent teaches a generic group of 5,9-substituted tetracycline derivatives including 9-t-butyl- $\alpha$ -6-deoxy-5-hydroxytetracycline.

Applicants' claimed invention is directed to 5,9-substituted tetracycline compounds, 5-substituent of said tetracycline compound is an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl. Applicants invention is also directed to pharmaceutical compositions containing the 5,9-substituted tetracycline compounds.

Applicants respectfully submit that the compounds disclosed in the '942 patent are not 5,9-substituted tetracycline as claimed by Applicants. The '942 reference does not teach or suggest tetracycline compounds with an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl as a 5-substituent on the tetracycline ring. Therefore, Applicants respectfully request that the rejection of claims 1 and 29 under 35 U.S.C. § 102(b) be withdrawn.

***Rejection of Claims 1 and 29 under 35 U.S.C. § 102(b)***

Claims 1 and 29 are rejected under 35 U.S.C. § 102(b) as anticipated by Bernardi *et al.* ('384). According to the Examiner, the '384 patent describes a group of tetracycline derivatives which include 9-methylthiomethyl- $\alpha$ -6-deoxy-5-hydroxy-tetracycline and 9-methyl- $\alpha$ -6-deoxy-5-hydroxytetracycline.

Applicants' claims are directed to 5, 9-substituted tetracycline compounds and pharmaceutical compositions, wherein the tetracycline is substituted at the 5 position with an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl. Applicants respectfully submit that the '384 patent does not teach or suggest 5,9 substituted tetracycline compounds with an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl, as a 5-substituent on the tetracycline ring. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 1 and 29 under 35 U.S.C. § 102(b).

***Rejection of Claims 1, 7 and 29 under 35 U.S.C. § 103(a)***

Claims 1, 7 and 29 are rejected under 35 U.S.C. § 103(a) as unpatentable over the '942 patent. According to the Examiner, the '942 patent "teaches a generic group of 5,9-substituted tetracycline derivatives" including 9-t-butyl- $\alpha$ -6-deoxy-5-hydroxytetracycline, and that the present claims differ from the present claims by "reciting additional tetracycline derivatives not taught or exemplified by the reference", and concluded that it would have been obvious to one of ordinary skill in the art to select any species of the genus because of a "reasonable" expectation that any of the species would have similar properties.

Applicants' claimed invention is directed to 5,9-substituted tetracycline compounds, wherein the 5-substituent is an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl. Applicants invention is also directed to pharmaceutical compositions containing the 5,9-substituted tetracycline compounds. Applicants do not claim compounds such as those cited by the Examiner with a hydroxy group at the 5 position, such as, for example, 9-t-butyl- $\alpha$ -6-deoxy-5-hydroxytetracycline

The '942 patent does not teach or suggest 5,9-substituted tetracycline compounds, wherein the 5-substituent is an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl. The '942 patent discloses only compounds having a hydroxyl group at the 5- position of the tetracycline ring. One of ordinary skill in the art, having the '942 patent at their disposal, would not find a teaching or suggestion for the replacement of a hydroxyl group at position 5 with, *e.g.*, an ester, alkanoyl; aroyl; alkaroyl; carbocyclic aryl, heteroaromatic, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl group, as presently claimed. Therefore, Applicants respectfully request that this rejection of claims 1, 7 and 29 under 35 § 103(a) be withdrawn.

***Rejection of Claims 1, 7, and 29 under 35 U.S.C. § 103(a)***

Claims 1, 7, and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bernardi *et al.* ('384). The Examiner argued that the '384 patent "teaches a generic group of 5,9- substituted tetracycline derivatives" including 9-methylthiomethyl-alpha-6-deoxy-5-hydroxytetracycline and 9-methyl-alpha-6-deoxy-5-hydroxytetracycline, and that the present claims differ from the present claims by "reciting additional tetracycline derivatives not taught or exemplified by the reference", and concluded that it would have been obvious to one of ordinary skill in the art to select any species of the genus because of a "reasonable" expectation that any of the species would have similar properties.

As discussed above, Applicants' claimed invention is directed to 5,9-substituted tetracycline compounds, wherein the 5-substituent is an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl. Applicants invention is also directed to pharmaceutical compositions containing the 5,9-substituted tetracycline compounds. Applicants do not claim compounds such as those cited by the Examiner with a hydroxy group at the 5 position, such as, for example, 9-methylthiomethyl-alpha-6-deoxy-5-hydroxytetracycline and 9-methyl-alpha-6-deoxy-5-hydroxytetracycline.

The '384 patent does not teach or suggest 5,9-substituted tetracycline compounds, wherein the 5-substituent is an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl. The '384 patent discloses only compounds having a hydroxyl group at the 5- position of the tetracycline ring. One of ordinary skill in the art, having

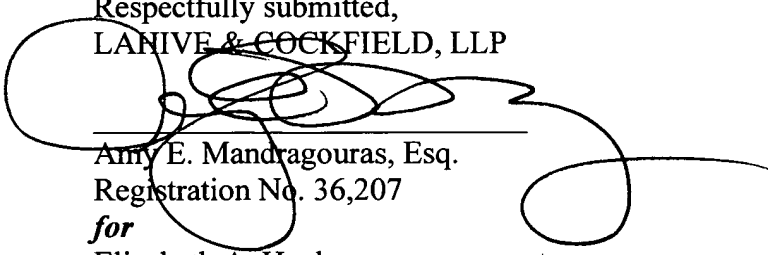
the '384 patent at their disposal, would not find a teaching or suggestion for the replacement of a hydroxyl group at position 5 with, *e.g.*, an ester, alkanoyl; aroyl; alkaroyl; carbocyclic aryl, heteroaromatic, alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl group, as presently claimed.

Therefore, Applicants respectfully request that this rejection of claims 1, 7, and 29 under 35 U.S.C. § 103(a) be withdrawn.

### CONCLUSION

In view of the remarks set forth above, it is respectfully submitted that this application is in condition for allowance. If there are any remaining issues or the Examiner believes that a telephone conversation with Applicants' Attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at (617) 227-7400.

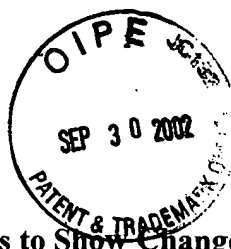
Respectfully submitted,  
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**Version with Markings to Show Changes Made**

1. [Amended] A 5, 9-substituted tetracycline compound, wherein the 5-substituent of said tetracycline compound is an ester; alkanoyl; aroyl; alkaroyl; carbocyclic aryl; heteroaromatic; alkyl; alkenyl; alkynyl; alkoxy; alkylthio; alkylsulfinyl; alkylsulfonyl; alkylamino; or an aryalkyl.

52. [New] A 5,9 substituted tetracycline compound, wherein said compound is 9-t-butyl-6-deoxy-5-acetylcarbonyloxytetracycline.